

## CLAIMS

1. A device for exciting surface plasmons, including light illuminating means (1), a transparent substrate (2) having a ridge, a metal layer (3) covering side surfaces of said ridge and their neighboring region, and a thin metal film (4) formed on a top face of said ridge, wherein evanescent waves (5) caused by light emitted from said light illuminating means (1) and transmitted through said transparent substrate (2) and said thin metal film (4) can excite surface plasmons in said thin metal film (4).

2. The device for exciting surface plasmons according to claim 1, wherein said ridge of said substrate (2) is formed in a striped manner, and the light emitted from said light illuminating means (1) is linearly polarized in a plane that includes a longitudinal direction and a normal direction of the top face of said striped ridge.

3. The device for exciting surface plasmons according to claim 1, wherein the light emitted from said light illuminating means (1) is convergent light.

4. The device for exciting surface plasmons according to claim 1, wherein shape and dimensions and refractive index of said ridge, and said metal layer (3) are set such that the light emitted from said light illuminating means (1) and directed to said ridge reaches said thin metal film (4) in an area smaller than a width of said ridge.

5. The device for exciting surface plasmons according to claim 1, wherein said metal layer (3) is formed of a conductor, and said thin metal film (4) is formed of one of gold, silver, copper and aluminum.

6. A surface plasmon microscope, including the device for exciting surface plasmons as recited in claim 1, a photodetector (5) for receiving light reflected by said

thin metal film (4) and said metal layer (3), and movable support means (7) for positioning a surface of a specimen (6) in the vicinity of said thin metal film (4) and for scanning the surface of the specimen.